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| SHELL OIL COMPANY P O BOX 2463 HOUSTON, TX 772522463 | | | EXAMINER WARTALOWICZ, PAUL A | |
| | | | ART UNIT 1754 | PAPER NUMBER |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/753,714

Applicant(s)

FENOUIL ET AL.

Examiner

Paul A. Wartalowicz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 April 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 4/16/07 have been fully considered but they are not persuasive.

Applicant argues that Reinalda et al. fail to teach whether or not the zirconia used is in the monoclinic form and makes no mention of the type of crystal structure of the zirconia particles used in the preparation of the zirconia extrudates.

However, Reinalda et al. is not relied upon to teach that the particulate zirconia comprising no more than 15 percent by weight of zirconia which is other than monoclinic zirconia for the preparation of zirconia extrudates. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Applicant argues that Khare et al. does not teach calcined zirconia extrudates comprising zirconia and one or more elements selected from groups IB, IIB, IIIB, IVB, VB, VIB, VIIB, VIII of the Periodic Table, lanthanides, and actinides.

However, Reinalda et al. teach a method wherein the mixture from which the extrudate is formed also contain sources of one or more elements chosen from Groups IB-VIIB and VIII (col. 2). Khare et al. is not relied upon to teach calcined zirconia

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extrudates comprising zirconia and one or more elements selected from groups IB, IIB, IIIB, IVB, VB, VIB, VIIB, VIII of the Periodic Table, lanthanides, and actinides. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Khare et al. is relied upon to teach wherein zirconia powder is mixed with an aqueous solution (col. 1, lines 31-35) for the purpose of carrying out a well-known process of shaping zirconia mixtures, then drying and calcining the resulting mixture.

Applicant argues that Wolff-Doring does not disclose or hint the value of using particulate zirconia containing a high level of monoclinic zirconia in terms of preparing zirconia extrudates having high crush strength.

However, Wolff-Doring et al. teach that monoclinic zirconium dioxide is used preferentially for certain catalytic operations (col. 1). This provides motivation to use monoclinic zirconia in Reinalda et al. because Reinalda et al. teach a zirconia based catalyst (col. 1). Because Wolff-Doring does not suggest using monoclinic zirconia for the purpose of having high crush strength is not evidence of nonobviousness. In response to applicant's argument that Wolff-Doring does not disclose or hint the value of using particulate zirconia containing a high level of monoclinic zirconia in terms of preparing zirconia extrudates having high crush strength, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion

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of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

Applicant argues that data in Table 3 shows significantly improved olefin yields are obtained using the catalyst of the invention as opposed to the comparative catalysts and that these unexpected results overcome the obviousness rejections set forth by the Examiner.

However, Table 3 compares the invention with comparative catalysts A (cobalt catalyst on a silica support having zirconia as a promoter element) and catalyst B (cobalt catalyst on a titania support having manganese as a promoter element). It is unclear how the results of Table 3 show unexpected results that would render the rejection nonobvious.

Additionally, Wolff-Doring et al. teach that monoclinic zirconium dioxide is used preferentially for certain catalytic operations (col. 1). It appears that catalytic advantages would be obvious in view of this disclosure.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-7 and 10-11 are rejected under 35 U.S.C. 103(a) as obvious over Reinalda et al. (U.S. 5217938) in view of Khare et al. (U.S. 5269990) and Wolff-Doring et al. (U.S. 6034029).

Reinalda et al. teach a process for the preparation for a zirconia-based catalyst (col. 1, lines 7-10) as follows: zirconia (inherently teaches zirconia particles, col. 1, lines 60-65) is mixed with a solvent (col. 2, lines 7-12) and with cobalt (col. 2, lines 47-59) preferably using the technique of impregnating the cobalt into the zirconia mixture (col. 4, lines 51-57) such that cobalt can be in form of a nitrate, hydroxide, oxide, or an acetate (col. 2, line 66-col. 3, line 5) and a solvent (col. 2, lines 9-15) and then mulling the mixture (mulling is equivalent to mixing and kneading, col. 4, lines 1-5) which comprises from about 20% to about 60% by weight (col. 1, lines 60-65) and then extruding the resulting mixture (col. 4, lines 12-20) then drying and calcining the extrudate (col. 4, lines 24-33). Reinalda et al. also teach wherein the mixture from which the extrudate is formed also contain sources of one or more elements chosen from Groups IB-VIIB and VIII (col. 2) and that the ingredients may be added in any in

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any order (col. 3, lines 35-45) and that preferably the catalytically active component is added and the resulting mixture is subjected to further mulling (col. 3, lines 61-67).

If this disclosure does not inherently meet the claimed invention, it would have been obvious to knead a particulate zirconia and a source of one or more catalytic elements with a solvent because of the reasoned explanation that Reinalda et al. teach that the ingredients may be added in any in any order (col. 3, lines 35-45) and that preferably the catalytically active component is added and the resulting mixture is subjected to further mulling (col. 3, lines 61-67) such that the zirconia, the catalytic additive, and the solvent would be subjected to mulling.

If Reinalda et al. does not inherently teach particulate zirconia, Khare et al. teach a process for making shaped zirconia particles (col. 1, lines 28-30) wherein zirconia powder is mixed with an aqueous solution (col. 1, lines 31-35) for the purpose of carrying out a well-known process of shaping zirconia mixtures, then drying and calcining the resulting mixture.

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide wherein zirconia powder with an aqueous solution (col. 1, lines 31-35) in Reinalda et al. in order to carry out a well-known process of shaping zirconia mixtures, then drying and calcining the resulting mixture as taught by Khare et al.

If the disclosure of Reinalda et al. teaching up to about 60% by solids does meet the limitation of the total solids content of the shapeable dough is in the range of from about 65% to about 75% by weight, it would have been obvious because Reinalda et al.

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teach that the total solids content of the shapeable dough is in the range of from about 20% to 60% (col. 1, lines 60-61). The prior art range is so close that one skilled in the art would have expected it to have the same properties. *Titanium Metals Corp. v. Banner*, 227 USPQ 773.

Reinalda et al. fail to teach wherein the particulate zirconia comprises no more than about 15% by weight of zirconia which is other than monoclinic zirconia.

Wolff-Doring et al., however, teach that it is known to use monoclinic zirconium dioxide having a large surface area and as large a proportion of monoclinic phase as possible (at least 90% by weight, col. 2) for catalytic applications (col. 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide monoclinic zirconium dioxide having a large surface area and as large a proportion of monoclinic phase as possible (col. 1) (at least 90% by weight, col. 2) in Reinalda et al. for catalytic applications (col. 1) as taught by Wolff-Doring et al.

If Reinalda does not teach the limitations of claim 6, Khare et al. teach adjusting the water content of the obtained mixture to about 5-40 weight % water (5-40 weight % translates to 60-95 % solids, col. 1, lines 35-40) for the purpose of carrying out a similar well-known process of preparing a zirconia mixture, extruding, drying, and calcining the resulting mixture.

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide the obtained mixture to about 5-40 weight % water (5-40 weight % translates to 60-95 % solids, col. 1, lines 35-40) in

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Reinalda et al. in order to carry out a similar well-known process of preparing a zirconia mixture, extruding, drying, and calcining the resulting mixture as taught by Khare et al.

Claims 1-7 and 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khare et al. (U.S. 5269990) in view of Reinalda et al. (U.S. 5217938) and Wolff-Doring et al. (U.S. 6034029).

Khare et al. teach a process for preparing shaped zirconia particles (col. 1, lines 6-9) such that zirconia powder is mixed with an aqueous solution and adjusting the water content of the obtained mixture to a level of about 5 to about 40 weight % water then shaping the mixture and then heating (water is a solvent, shaping mixture meets the limitation of mixing and kneading, heating step meets limitation of drying and heating, 5-40% water meets the limitation of 50-85% solids by weight in the mixture; col. 1, lines 31-41) wherein catalytically active components are generally incorporated into the zirconia support particles by impregnation (col. 1, lines 17-22). Khare et al. fail to teach cobalt in the form of the group consisting of a hydroxide, acetate, nitrate, oxide, and mixtures thereof impregnated into zirconia mixture.

Reinalda et al., however, teach a process for preparation of a zirconia-based catalyst (col. 1, lines 6-11) wherein cobalt in the form of acetate, hydroxide, nitrate, and oxide (col. 2, lines 55-60, col. 2, line 67-col. 3, line 5) is impregnated into the extrudate (col. 4, lines 51-60) for the purpose of using a preferred technique for depositing (col. 4, lines 51-52) the catalytically active material of cobalt (col. 2, lines 50-53).

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Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide wherein cobalt in the form of acetate, hydroxide, nitrate, and oxide (col. 2, lines 55-60, col. 2, line 67-col. 3, line 5) is impregnated into the extrudate (col. 4, lines 51-60) in Khare et al. in order to use a preferred technique for depositing (col. 4, lines 51-52) the catalytically active material of cobalt (col. 2, lines 50-53) as taught by Reinalda et al.

Khare et al. fail to teach wherein the particulate zirconia comprises no more than about 15% by weight of zirconia which is other than monoclinic zirconia.

Wolff-Doring et al., however, teach that it is known to use monoclinic zirconium dioxide having a large surface area and as large a proportion of monoclinic phase as possible (at least 90% by weight, col. 2) for catalytic applications (col. 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide monoclinic zirconium dioxide having a large surface area and as large a proportion of monoclinic phase as possible (col. 1) (at least 90% by weight, col. 2) in Khare et al. for catalytic applications (col. 1) as taught by Wolff-Doring et al.

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Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

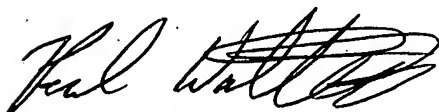
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul A. Wartalowicz whose telephone number is (571) 272-5957. The examiner can normally be reached on 8:30-6 M-Th and 8:30-5 on Alternate Fridays.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Paul Wartalowicz
June 27, 2007



Steven Bos
Primary Examiner
A.U. 1754